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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
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DAY, HERNG DER

ART UNIT	PAPER NUMBER
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2128

NOTIFICATION DATE	DELIVERY MODE
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03/05/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com  
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<b>Office Action Summary</b>	<b>Application No.</b> 10/619,796	<b>Applicant(s)</b> CANNING, FRANCIS X.	
	<b>Examiner</b> HERNG-DER DAY	<b>Art Unit</b> 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 9-14, 17-24, 26 and 30-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-14, 17-24, 26 and 30-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

**1.** This communication is in response to Applicant's Response ("Response") to Office Action dated October 8, 2008, filed February 9, 2009.

**1-1.** Claims 9, 21-24, 31, and 36-39 have been amended. Claims 2-8, 15, 16, 25, and 27-29 have been canceled. Claims 40-44 have been added. Claims 9-14, 17-24, 26, and 30-44 are pending.

**1-2.** Claims 9-14, 17-24, 26, and 30-44 have been examined and rejected.

#### ***Claim Objections***

**2.** Claim 9 is objected to because there are two consecutive "locations locations" in lines 17-18 of the claim. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

**3.** The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**4.** Claim 9-14, 17-20, 26, and 40-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**4-1.** Claim 9 recites the newly added limitation, "a processor means that uses said block-sparse decomposed matrix to *find* electric currents, said electric currents *modeling* said electromagnetic effects" at the end of the claim which is vague and indefinite. Specifically, it is

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unclear how a block-sparse decomposed matrix only (i.e., a matrix contains substantially sparse block having non zero elements) may be used to *find* electric currents (i.e., moving of electric charges). Furthermore, claim 9 recites “A device for modeling electromagnetic effects” in the preamble. Therefore, the recited limitation at the end of claim 9, “said electric currents *modeling* said electromagnetic effects” implies some form of relatedness between the recited device and the recited electric currents and which is unclear. Clarification of the metes and bounds, via clearer claim language, is requested.

**4-2.** Claim 26 recites the limitation “said first block” in line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim.

**4-3.** Claim 42 recites the limitation “said *scattered* electric field” in line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim.

**4-4.** Claim 43 recites the limitation “said *scattered* pressure field” in line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim.

**4-5.** Claim 44 recites “The *method* of Claim 33” in line 1 of the claim. However, claim 33 is only a dependent claim of “The computing *system* of Claim 22”.

**4-6.** Claims not specifically rejected above are rejected as being dependent on a rejected claim.

### ***Claim Rejections - 35 USC § 101***

**5.** 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

**6.** Claims 9-14, 17-24, 26, and 30-44 are rejected under 35 U.S.C. 101 because the inventions as disclosed in claims are directed to non-statutory subject matter.

**6-1.** Claims 9-14, 17-24, 26, and 30-44 are directed to the manipulation of abstract ideas of modeling electromagnetic effects, computing physical sources, data compression, or factorization by applying decomposition to matrix. This claimed subject matter lacks a practical application of a judicial exception (abstract idea) since it fails to produce a useful, concrete, and tangible result.

As stated in the MPEP 2106 (IV)(C), “Likewise, a claim that can be read so broadly as to include statutory and nonstatutory subject matter must be amended to limit the claim to a practical application. In other words, if the specification discloses a practical application of a section 101 judicial exception, but the claim is broader than the disclosure such that it does not require a practical application, then the claim must be rejected.”, “The tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. However, the tangible requirement does require that the claim must recite more than a 35 U.S.C. 101 judicial exception, in that the process claim must set forth a practical application of that judicial exception to produce a real-world result. *Benson*, 409 U.S. at 71-72, 175 USPQ at 676-77 (invention ineligible because had “no substantial practical application.”).” and “Thus, a claim that recites a computer that solely calculates a mathematical formula (see *Benson*) or a computer disk that solely stores a mathematical formula is not directed to the type of subject matter eligible for patent protection.” Also, as stated in the MPEP 2106.02, “If the “acts” of a claimed process manipulate only numbers, abstract concepts or ideas, or signals representing any of the foregoing, the acts are not being applied to appropriate subject matter. *Gottschalk v. Benson*, 409

U.S. 63, 71 - 72, 175 USPQ 673, 676 (1972). Thus, a process consisting solely of mathematical operations, i.e., converting one set of numbers into another set of numbers, does not manipulate appropriate subject matter and thus cannot constitute a statutory process.”

Specifically, as described in the specification in lines 19-20 of page 8, “The terms “sources” and “physical sources” are used herein to include all types of actual and/or fictitious sources.” Therefore, the claimed subject matter is directed to the manipulation of abstract ideas including those fictitious sources (e.g., a number, formula, expression, etc.,) and/or the effect of those fictitious sources. In other words, the claimed subject matter is so broad such that it does not provide or require a practical application. On the other hand, the claimed subject matter is seeking to patent substantially every application of the idea of compression or factorization of a matrix by applying a decomposition.

Furthermore, the claimed subject matter does not produce a tangible result because the claimed subject matter fails to produce a result that is limited to having real world value rather than a result that may be interpreted to be abstract in nature as, for example, a thought, a computation, or manipulated data. More specifically, the claimed subject matter includes applying a decomposition to find electric currents, to produce the strengths of energy sources or physical disturbances, or to compute a solution of a system of equations. This produced result remains in the abstract and, thus, fails to achieve the required status of having real world value. In other words, the claimed subject matter is consisting solely of mathematical operations, i.e., converting one set of numbers into another set of numbers, describing sources (e.g., *fictitious* sources) and/or the effect of those sources, and thus, is nonstatutory because the manipulation on abstractions (e.g., *fictitious* sources) just can not produce a tangible result.

***Recommendations***

7. Claim 9 recites the limitation, “said sparse decomposed matrix” in line 14 of the claim.

For clarification purposes, the Examiner suggests that “said sparse decomposed matrix” be replaced with “said block-sparse decomposed matrix”.

8. Claim 23 recites the limitation, “said system equations” in line 12 of the claim. For clarification purposes, the Examiner suggests that “said system equations” be replaced with “said system of equations”.

***Applicant’s Arguments***

9. Applicant argues the following:

**9-1. Clarification**

(1) “The specification states on Page 8, Lines 19-20, “The terms “sources” and “physical sources” are used herein to include all types of actual and/or fictitious sources.” This language was not intended to broaden the term “physical sources” to include sources other than those known to produce a physical effect.” (Page 8, paragraph 3, Response)

(2) “Thus, although the term physical sources is intended to include equivalent fictitious sources that are well known to produce a physical effect, this term does not include sources do not produce a physical effect.” (Page 9, paragraph 2, Response)

(3) “To summarize, the term physical sources includes only sources that produce a physical effect, while some sources that produce a physical effect are not readily identifiable with actual physical sources.” (Page 9, paragraph 3, Response)

**9-2. Response to Rejection of Claims 2-8, 15-16, and 25 Under 35 U.S.C. 112 Second Paragraph**

(4) "Claims 2-8, 15-16, and 25 have been cancelled." (Page 9, paragraph 4, Response)

**9-3.** Response to Rejection of Claims 2-8, 15-16, and 25 Under 35 U.S.C. 103

(5) "Claims 2-8, 15-16, and 25 have been cancelled." (Page 9, paragraph 5, Response)

**9-4.** Response to Rejection of Claims 2-39 Under 35 U.S.C. 101

(6) "However, as described above, the term physical sources only includes sources that produce a real physical effect." (Page 9, paragraph 7, Response)

(7) "Thus, Applicant asserts that all of the claims produce a Useful, Concrete and Tangible result. Furthermore, the judicial exception or abstract idea involved is confined within a method for producing new sources. Several practical applications of this judicial exception are recited within the claims." (Page 10, paragraph 2, Response)

(8) "Although the Useful, Concrete and Tangible and non-preemption tests are satisfied, this is not required post Bilski, which presented the machine or transformation test." (Page 10, paragraph 3, Response)

***Response to Arguments***

**10.** Applicant's arguments have been fully considered.

**10-1.** Applicant's arguments (1) - (3) and (6) - (7) are not persuasive. The arguments of Applicant's intention to limit the "physical sources" including only sources that produce a "physical effect" do not appear to have support in the original disclosure because the argued "physical effect" has not been specifically defined in the specification as argued. For the purpose of claim examination with the broadest reasonable interpretation, the Examiner will interpret the argued "physical effect" as the "effect of *physical source*". As described in the specification in lines 19-20 of page 8, "The terms "sources" and "physical sources" are used



herein to include *all types of actual and/or fictitious sources*.” Therefore, a “physical source” could be, for example, a number, a formula, an expression, etc., and is not limited to, for example, a magnetic current or an electric charge. In view of the specification, the argued “physical effect” will be further interpreted as the “effect of all types of actual and/or *fictitious sources*”. In other words, the arguments of Applicant’s intention to limit the “physical sources” including only sources that produce a “physical effect” have not clarified the *fictitious* issue and, thus, have not overcome the 101 rejection of manipulation on abstractions (e.g., *fictitious sources* and/or the *effect* of those *fictitious sources*) without a practical application producing a useful, concrete, and tangible result and, thus, are not persuasive.

**10-2.** Applicant’s argument (4) is persuasive. The rejections of claims 2-8, 15-16, and 25 under 35 U.S.C. 112, second paragraph, in Office Action dated October 8, 2008, have been withdrawn.

**10-3.** Applicant’s argument (5) is persuasive. The rejections of claims 2-8 and 15-16 under 35 U.S.C. 103 in Office Action dated October 8, 2008, have been withdrawn.

**10-4.** Applicant’s argument (8) is not persuasive. As detailed in item **6-1** above, the claimed subject matter is consisting solely of mathematical operations, i.e., converting one set of numbers into another set of numbers, describing sources (e.g., *fictitious sources*) and/or the effect of those sources, and thus, is nonstatutory because the manipulation on abstractions (e.g., *fictitious sources*) just can not produce a tangible result. Furthermore, under current PTO practice, Process claim is examined following Mr. John J. Love’s memorandum “Guidance for Examining Process Claims in view of *In re Bilski*”, dated January 7, 2009, which can be viewed in [www.uspto.gov/web/offices/pac/dapp/opla/documents/bilski\\_guidance\\_memo.pdf](http://www.uspto.gov/web/offices/pac/dapp/opla/documents/bilski_guidance_memo.pdf). According to the memorandum, Applicant’s argument regarding “post *Bilski*” requirement is not persuasive.

***Conclusion***

**11.** Applicant's amendment necessitated the new ground(s) of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

**12.** Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Herng-der Day whose telephone number is (571) 272-3777. The Examiner can normally be reached on 9:00 - 17:30.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: (571) 272-2100.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kamini S. Shah can be reached on (571) 272-2279. The fax phone numbers for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Kamini S Shah/  
Supervisory Patent Examiner, Art Unit 2128

/Herng-der Day/  
Examiner, Art Unit 2128

February 23, 2009